CLAIMS

What is claimed is:

1. A printable adhesion modifying coating composition comprising 5-97% polymer, 0-80% solvents, and 0.01-1.0% defoamer.

2. The coating composition of claim 1 comprising 5-97% polymer, 0-80% diluent, 0-30% filler, 0-10% catalyst, 0 - 2.0% flow control additives 0.01-1.0% defoamer and 0-1.0% colorant.

3. The coating composition of claim 2 wherein said polymer is selected from the group consisting of thermoplastic resins, thermosetting resins, and radiation curable polymers.

4. The coating composition of claim 3 wherein said thermoplastic polymer is selected from the group consisting of vinyl, polyester, polyurethane, acrylic, polystyrene co-polymers and phenoxy resins.

5. The coating composition of claim 3 wherein said thermosetting polymer is a resin selected from the group consisting of amino resin, isocyanate cross-linked phenoxy, epoxy, polyester, vinyl and anhydride and amine cured epoxy resins.

6. The coating composition of claim 3 wherein said radiation curable polymer is selected from the group consisting of acrylated or methacrylated epoxy, urethane or

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

polyester oligomers, epoxy, cycloaliphatic epoxy, epoxidized rubber and epoxidized oils.

7. The coating composition of claim 2 wherein said catalyst is selected from the group consisting of blocked organic or inorganic acids, anhydrides, amines, modified amines, dicyandiamide, free radical and cationic photoinitiators.

8. The coating composition of claim 2 wherein said diluents are one or more products selected from the group consisting of water, aromatics, ketones, glycol ethers, glycol ether acetates, dibasic esters, gamma butyrolactone, N-methyl pyrrolidinone and reactive diluents and mixtures thereof.

9. The coating composition of claim 2 wherein said fillers are one or more products selected from the group consisting of talc, silica, kaolin, calcium carbonate, barium sulfate and synthetic silica and mixtures thereof.

10. The coating composition of claim 2 wherein said flow control additives are one or more products selected from the group consisting of silicone or non-silicone oils or surfactants and leveling agents.

11. The coating composition of claim 2 wherein said defoamer is one or more products selected from the group consisting of silicone or non-silicone defoamers and air release agents.

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

12. The coating composition of claim 2 wherein said colorant is one or more products selected from the group consisting of dyes, inorganic, organic or organometallic pigments or mixtures thereof, solutions and dispersions thereof.

13. The coating composition of claim 2 comprising approximately 25.4% polymer, 74.1% solvents, 0.1% defoamer and 0.4% pigment dispersion.

14. A flexible tamper indicating transponder comprising a flexible transponder and said adhesion modifying coating of claim 1.

15. The flexible tamper indicating transponder of claim 14 comprising (a) a flexible substrate, (b) conductive tracks adhered to one or both surfaces of said flexible substrate, (c) an integrated circuit affixed to at least one surface of said flexible substrate and (d) the adhesion modifying coating of claim 1 applied to one or both surfaces of said flexible substrate.

16. The flexible tamper indicating transponder of claim 15 wherein said substrate is selected from the group consisting of polyester, polyurethane, polyimide, polyetherimide, vinyl, nylon and paper.

17. The flexible tamper indicating transponder of claim 15 wherein said conductive tracks are polymer thick film inks, solid metal conductors, and transfer-laminated conductors.

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

18. The flexible tamper indicating transponder of claim 17 wherein said solid metal conductors are selected from the group consisting of silver, copper, and aluminum.

19. The flexible tamper indicating transponder of claim 17 wherein said polymer thick film inks are conductive inks consisting of conductive particles in a polymer binder said conductive particles selected from the group consisting of silver, copper, gold, carbon and graphite.

20. The flexible tamper indicating transponder of claim 17 wherein said transfer laminated conductors are inks consisting of conductive particles selected from the group consisting of silver and copper with and without a polymer binder.

21. The flexible tamper indicating transponder of claim 16 wherein said substrate is polyethylene terephthalate film.

22. The flexible tamper indicating transponder of claim 15 wherein said tamper track is a transfer laminated conductor attached to the substrate with a bonding adhesive, with no adhesion modifying coating present.

23. The flexible tamper indicating transponder of claim 22 wherein said bonding adhesive is patterned or solid.

24. The flexible tamper indicating transponder of claim 23 wherein an adhesion modifying coating is applied over or under the said tamper tracks.

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

25. The flexible tamper indicating transponder of claim 15, wherein said adhesion modifying coating is applied directly to said substrate.

26. The flexible tamper indicating transponder of claim 15, wherein said conductive tracks comprise tamper indicating tracks and an antenna coil.

27. The flexible tamper indicating transponder of claim 15, wherein said tamper indicating tracks are applied in contact with said adhesion modifying coating.

28. The flexible tamper indicating transponder of Claim 15, wherein the said adhesion modifying coating is applied directly to the substrate; the said conductive tacks comprise tamper indicating tracks and the antenna coil; the tamper indicating tracks are applied in contact with said adhesion modifying coating.

29. The tamper indicating transponder of Claim 28 wherein the said tamper indicating tracks comprise a portion or the entirety of said antenna coil.

30. The tamper indicating transponder of Claim 28 wherein said tamper tracks are independent from said antenna coil.

31. The tamper indicating transponder of Claims 28 wherein said antenna and integrated circuit are on the same side of the substrate as the said adhesion modifying coating and tamper indicating tracks.

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

32. The tamper indicating transponder of Claims 28 wherein said antenna and integrated circuit are on the opposite side of the substrate as the said adhesion modifying coating and tamper indicating tracks.

33. The tamper indicating transponder of Claims 28 wherein an adhesive is affixed to the said transponder in contact with the said tamper indicating tracks.

34. The tamper indicating transponder of Claim 33 wherein the relative adhesion between the said adhesive, tamper indicating tracks, adhesion modifying layer and substrate is controlled by the pattern of the adhesion modifying layer.

35. The tamper indicating transponder of Claim 34 wherein the said pattern of the said adhesion modifying layer contains one or more of the following features:

a solid coating pattern,

a pattern of regions with and without said adhesion modifying material,

a solid, contiguous border at the perimeter of said transponder,

a non-contiguous border at the perimeter of said transponder.

36. The tamper indicating transponder of Claim 35 wherein the said pattern of the said adhesion modifying layer is further comprised of one or more of the following features:

a grid pattern comprised of lines and gaps between them,

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

a grid pattern comprised of geometric shapes and gaps between them,

said grid pattern is orthogonal or angled relative to the transponder perimeter,

a variation in the density of said grid pattern achieved by varying the size of the lines, geometric shapes and/or the gaps between them,

larger geometric shapes in the said grid pattern wherein no adhesion modifying coating is applied.

37. A tamper indicating transponder of Claim 36 wherein the said pattern of the said adhesion modifying layer is further comprised of the following features:

a grid pattern comprised of lines and gaps,

said grid pattern is applied at an angle relative to the said transponder perimeter,

a contiguous border at said transponder perimeter

one or more regions absent of said adhesion modifying coating,

region absent of said adhesion modifying coating position in alignment with one or more electronic devices, such as the RFID integrated circuit.

38. A method for applying an adhesion modifying coating in a predetermined pattern on a tamper indicating transponder comprising an additive printing process.

39. The method of claim 38 wherein said additive printing process is selected from the group consisting of screen printing, roto-gravure and lithography.

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

40. A method for applying an adhesion modifying coating in a predetermined pattern on a tamper indicating transponder comprising a subtractive printing process.

41. The method of claim 40 wherein said subtractive printing process comprises (1) applying a uniform coating of said adhesion modifying coating on a surface of said transponder, (2) applying a mask with the image of the desired pattern of said coating, (3) curing said coating, and (4) removing the unwanted coating.

42. An electrically conductive ink for use in a tamper indicating transponder of claim 17, said ink selected from the group consisting of polymer thick film inks, inks with or without adhesive, inks comprising conductive particles, and transfer laminated inks.

43. The electrically conductive ink of claim 42 wherein said conductive particles are selected from the group consisting of silver, copper, gold, carbon and graphite.

44. An adhesion modifying coating for a tamper indicating transponder, said coating affecting the destruction of an electrically conducting material in said transponder, wherein said coating is applied before the application of said electrically conducting material.

45. An adhesion modifying coating for a tamper indicating transponder, said coating affecting the destruction of an electrically conducting material in said transponder,

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

wherein said coating is applied after the application of said electrically conducting material.

46. The adhesion modifying coating of claim 44, wherein said coating comprises varnish, silicone, or ink.

47. The adhesion modifying coating of claim 45, wherein said coating comprises varnish, silicone, or ink.

48. A method of applying an adhesion modifying coating to a tamper indicating transponder used as a label component, so that said transponder will indicate whether an attempt has been made to tamper with said label, said method comprising applying said coating as a pattern of straight or curved lines, circles, dots, or other geometric shapes, said patterns optionally being interconnected.

49. The method of applying the adhesion modifying coating of claim 48 wherein said pattern is selected from the group consisting of a straight line square grid, a pattern oriented at different angles relative to the pattern of electrically conducting material, and a pattern having varying line widths and spaces between lines.

50. The method of applying said adhesion modifying coating of claim 41, wherein said coating is cured via thermal curing, curing by Ultraviolet or visible light and electron radiation.

51. A method for modifying the destructibility properties of destructible tamper indicating tracks used in a tamper

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

indicating transponder label, wherein said modification involves changing the adhesive used to apply a tamper indicating transponder label to an object or surface.

52. A method for modifying the destructibility properties of destructible tamper indicating tracks used in a tamper indicating transponder label, wherein said modification involves changing the formulation of the adhesive modifying coating material.

53. A method for modifying the destructibility properties of destructible tamper indicating tracks used in a tamper indicating transponder label, wherein said modification involves modifying the pattern of the adhesion modifying coating.

54. The flexible tamper indicating transponder of claim 16 wherein only a single layer of one substrate is used.

55. The flexible tamper indicating transponder of claim 16 wherein multiple layers of substrate are used.

56. The flexible tamper indicating transponder of claim 55 wherein said multiple layers are made of the same substrate.

57. The flexible tamper indicating transponder of claim 55 wherein said multiple layers are made of different substrates.

58. A flexible tamper indicating transponder wherein two or more transponders are incorporated onto a single substrate.

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

59. A flexible tamper indicating transponder of claim 58 wherein said transponders operate at two or more frequencies or protocols.

60. A flexible tamper indicating transponder of claim 17, wherein two or more transponders are incorporated onto a single substrate.

61. A flexible tamper indicating transponder of claim 60, wherein said transponders operate at two or more frequencies or protocols.

62. A tamper indicating transponder of claim 15 wherein the integrated circuit may be active or passive.

63. A tamper indicating transponder of claim 62 comprising one or more electronic components in addition to said integrated circuit.

64. The flexible tamper indicating transponder of claim 14 comprising (a) flexible substrate, (b) conductive tracks adhered to one or both surfaces of said flexible substrate and (c) the adhesion modifying coating of claim 1 applied to one or both surfaces of said flexible substrate.

65. A tamper indicating circuit construction of claim 64 comprising one or more electronic components attached to said conductive tracks.

ATTORNEY DOCKET NO. PARP-129XX
WEINGARTEN, SCHURGIN,
GAGNEBIN & HAYES LLP
TEL. (617) 542-2290
FAX. (617) 451-0313